IBM

3340 Models A2, B1, B2
3344 Models B2, B2F
Direct Access Storage

Reference Summary

First Edition (April 1976)

The capacity table and the speed and capacity data in this reference summary are based on information in the *Reference Manual for IBM 3340/3344 Disk Storage* (GA26-1619). This summary will be updated from time to time. However, GA26-1619 is the authoritative reference source and will be the first to reflect changes.

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Speed

Start time (3340) . . . . . less than 20 seconds
Start time (3344) . . . . not applicable*
Nominal read/write rate 885KB/second
Average rotational delay . . . . 10.12 ms
Average access time** . . . . 25 ms

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* Because of fixed media design

** The 3348 Model 70F has 5 logical cylinders (numbers 1-5)
with zero access time. The 3344 Model B2F has 10 logical
cylinders (numbers 1-10) with zero access time. The fixed
head capacity is associated with the first of the four logical
3348 Model 70 volumes on each drive.

Capacity — 3340

	3348 Model 35	3348 Model 70/70F
Data surfaces per module	3	6
Physical heads per surface	2	2
Logical cylinders per 3348	348 + 1 alt.	696 + 2 alt.
Logical cylinders per physical cylinder	1	2
Physical tracks per physical cylinder	6	12
Logical tracks per physical cylinder	12	24
Logical tracks per logical cylinder	12	12
Logical tracks per physical track	2	2
Logical tracks per 3348	4,176 + 12 alt.	8,352 + 24 alt.
Track capacity	8,368	8,368
Logical cylinder capacity	100,416	100,416
3348 capacity	34,944,768	69,889,536

Capacity — 3344

The 3344 always operates in 3340 compatibility mode,
emulating four 3340s per drive. Capacity is therefore
equal to that of four 3348 Model 70s.

Track Capacity

The number of records that can be contained on a track depends on the record size. The following equation is used to determine the number of equal-length records per track. Home address, R0 space, and skip defect are accounted for by the equation and by the capacity table.

$$\text{No. of equal-length records per track} = \frac{8{,}535 \ \text{(bytes/track)}}{KL + DL + C \ \text{(bytes/record)}}$$

where:

$$KL = \text{key length}$$
$$DL = \text{data length}$$
$$C^* = 167 \text{ when } KL = 0$$
$$242 \text{ when } KL \neq 0$$

*overhead per record

Use of Table

Some examples of how the capacity table may be used follow. In the table, "records" refers to physical records.

- Assume 150-byte logical records to be recorded unblocked (data length = 150) and without keys. The table indicates that 26 records can be placed on each track (312 on each cylinder and 217,152 on each 3348 Model 70). Reducing the record length by 1 byte permits 27 records per track, an increase of 8352 records per 3348 Model 70. Alternatively, the record length can be increased by 11 bytes without decreasing the number of records per pack.

- To see the effect of blocked records, assume the same 150-byte logical records are to be recorded without keys. Also assume a blocking factor of 10 (data length = 1500). The table indicates that 5 physical records can be written on each track for a total of 50 logical records per track (compared with 26 logical records if unblocked).

- Assume 100-byte logical records, unblocked, and formatted with keys (data length = 100, key length = 8). The number to look up in the "with keys" part of the table is 108 (key length + data length). There will be 24 records per track.

Capacity Table

NUMBER OF BYTES				
Without Keys			With Keys	
Max. per record	Per 3348		Max. per record	Per 3348
	Mod. 35	Mod. 70/70F		Mod. 35
8368	34,944,768	69,889,536	8293	34,631,568
4100	34,243,200	68,486,400	4025	33,616,800
2678	33,549,984	67,099,968	2603	32,610,384
1966	32,840,064	65,680,128	1891	31,587,264
1540	32,155,200	64,310,400	1465	30,589,200
1255	31,445,280	62,890,560	1180	29,566,080
1052	30,752,064	61,504,128	977	28,559,664
899	30,033,792	60,067,584	824	27,528,192
781	29,353,104	58,706,208	706	26,534,304
686	28,647,360	57,294,720	611	25,515,360
608	27,929,088	55,858,176	533	24,483,888
544	27,260,928	54,521,856	469	23,502,528
489	26,546,832	53.093,664	414	22,475,232
442	25,841,088	51,682,176	367	21,456,288
402	25,181,280	50,362,560	327	20,483,280
366	24,454,656	48,909,312	291	19,443,456
335	23,782,320	47,564,640	260	18,457,920
307	23,076,576	46,153,152	232	17,438,976
282	22,375,008	44,750,016	207	16,424,208
259	21,631,680	43,263,360	184	15,367,680
239	20,959,344	41,918,688	164	14,382,144
220	20,211,840	40,423,680	145	13,321,440
204	19,593,792	39,187,584	129	12,390,192
188	18,842,112	37,684,224	113	11,325,312
174	18,165,600	36,331,200	99	10,335,600
161	17,480,736	34.961,472	86	9,337,536
149	16,800,048	33,600,096	74	8,343,648
137	16,019,136	32,038,272	62	7,249,536
127	15,380,208	30,760,416	52	6,297,408
117	14,657,760	29,315,520	42	5,261,760
108	13,981,248	27,962,496	33	4,272,048
99	13,229,568	26,459,136	24	3,207,168
91	12,540,528	25,081,05€	16	2,204,928
84	11,926,656	23,853,312	9	1,277,856
76	11,108,160	22,216,320		
70	10,523,520	21,047,040		
63	9,734,256	19,468,512		
57	9,045,216	18,090,432		
51	8,306,064	16,612,128		
46	7,683,840	15,367,680		
41	7,019,856	14,039,712		
36	6,314,112	12,628,224		
31	5,566,608	11,133,216		
26	4,777,344	9,554,688		
22	4,134,240	8,268,480		
18	3,457,728	6,915,456		
14	2,747,808	5,495,616		
10	2,004,480	4,008,960		
7	1,432,368	2,864,736		
3	626,400	1,252,800		

	NUMBER OF RECORDS			
Per 3348	Per track	Per cylinder	Per 3348	
Mod. 70/70F			Mod. 35	Mod. 70/70F
69,263,136	1	12	4176	8352
67,233,600	2	24	8352	16704
65,220,768	3	36	12528	25056
63,174,528	4	48	16704	33408
61,178,400	5	60	20880	41760
59,132,160	6	72	25056	50112
57,119,328	7	84	29232	58464
55,056,384	8	96	33408	66816
53,068,608	9	108	37584	75168
51,030,720	10	120	41760	83520
48,967,776	11	132	45936	91872
47,005,056	12	144	50112	100224
44,950,464	13	156	54288	108576
42,912,576	14	168	58464	116928
40,966,560	15	180	62640	125280
38,886,912	16	192	66816	133632
36,915,840	17	204	70992	141984
34,877,952	18	216	75168	150336
32,848,416	19	228	79344	158688
30,735,360	20	240	83520	167040
28,764,288	21	252	87696	175392
26,642,880	22	264	91872	183744
24,780,384	23	276	96048	192096
22,650,624	24	288	100224	200448
20,671,200	25	300	104400	208800
18,675,072	26	312	108576	217152
16,687,296	27	324	112752	225504
14,499,072	28	336	116928	233856
12,594,816	29	348	121104	242208
10,523,520	30	360	125280	250560
8,544,096	31	372	129456	258912
6,414,336	32	384	133632	267264
4,409,856	33	396	137808	275616
2,555,712	34	408	141984	283968
	35	420	146160	292320
	36	432	150336	300672
	37	444	154512	309024
	38	456	158688	317376
	39	468	162864	325728
	40	480	167040	334080
	41	492	171216	342432
	42	504	175392	350784
	43	516	179568	359136
	44	528	183744	367488
	45	540	187920	375840
	46	552	192096	384192
	47	564	196272	392544
	48	576	200448	400896
	49	588	204624	409248
	50	600	208800	417600